



An overview of the HySPLIT applications from NCSR Demokritos

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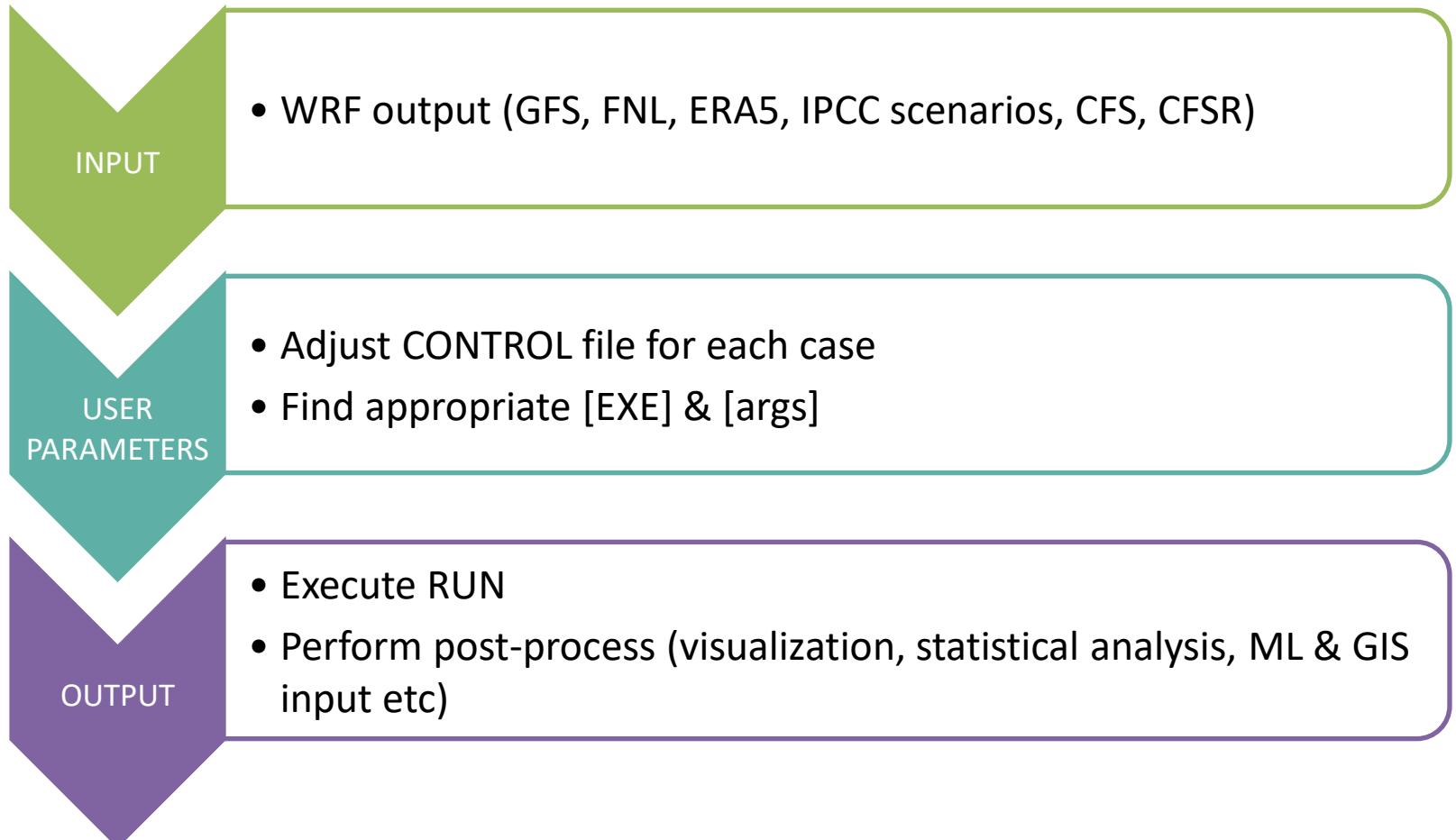


Scope

- Present HySPLIT applications at NCSRDI
 - Industrial Accidents in Greece
 - HySPLIT for assessing climate change
 - Wildfire emission modelling linked to infrastructure impacts
 - Radionuclide dispersion from April 2020 Chernobyl wildfires



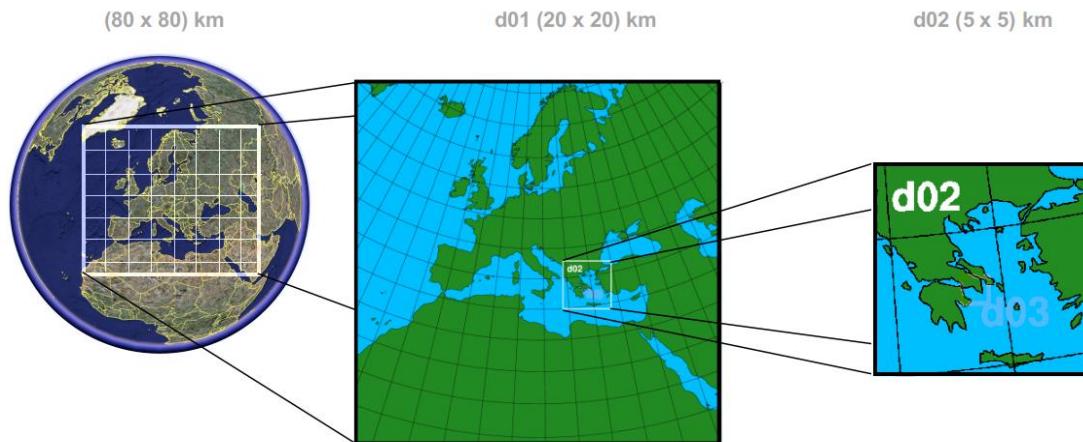
Basic Process





Meteorological domains

- Daily NWP
 - Europe (15km), Greece (3km), Athens (1km)
 - Forced by GFS
- Seasonal & Climate
 - Europe (20km), Greece (5km)
 - Forced by CFS (seasonal)
 - Forced by ERA-I & EC-EARTH (climate)





Industrial Accidents in Greece

- All Greek SEVESO type industries
- Daily loop, HySPLIT concentration runs with unitary emission source.
 - Start at 09:00, duration of release 9 hours, simulation for 12 hours

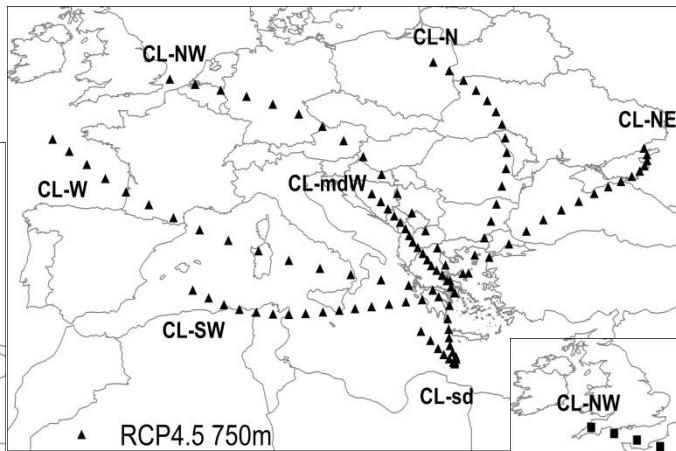
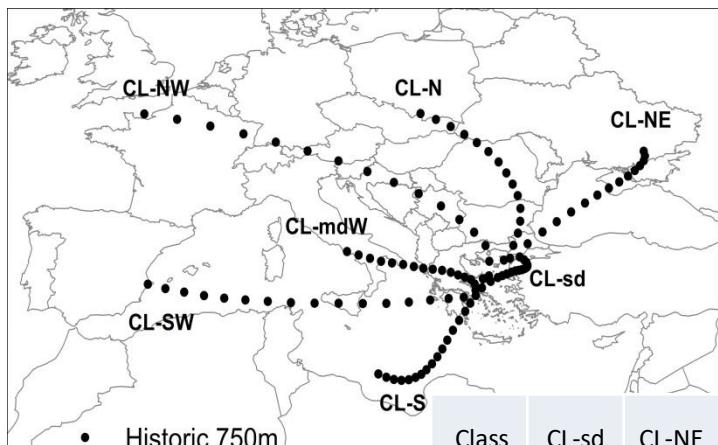




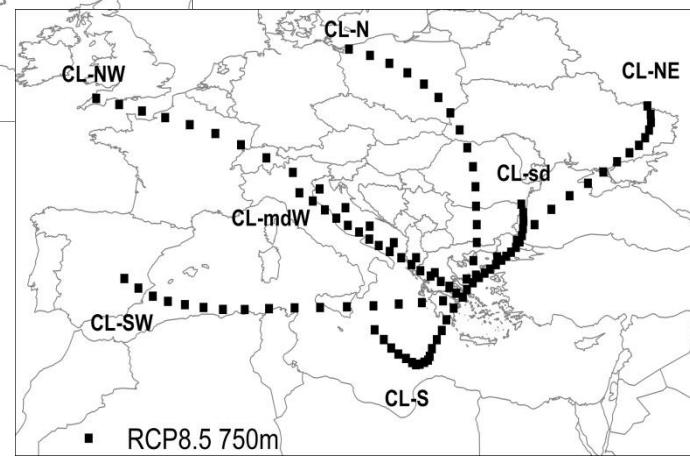
Assessing Climate Impacts in Athens

- HySPLIT backward trajectory for climate simulations
- 750, 1500, 3000 m AMSL daily at 12:00 UTC , 96-h back
- Clustering outside HySPLIT

1980-2010



2020-2050



	Class	CL-sd	CL-NE	CL-N	CL-NW	CL-mdW	CL-W	CL-S
Historic	19.9	17.8	16.0	6.4	18.1	10.9	11.0	
RCP4.5	8.5	16.5	16.3	19.7	14.0	15.5	9.4	
RCP8.5	8.4	16.9	17.4	19.9	14.8	14.9	7.7	

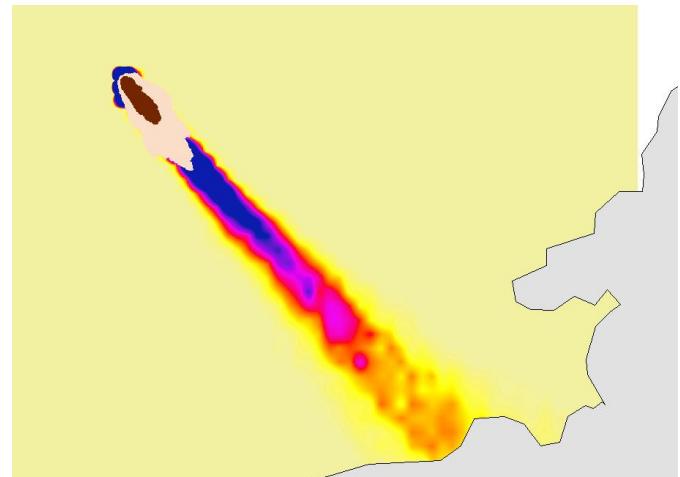
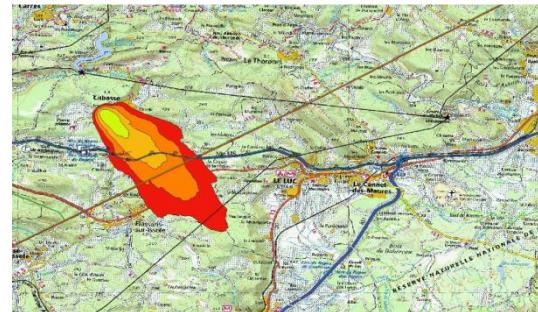
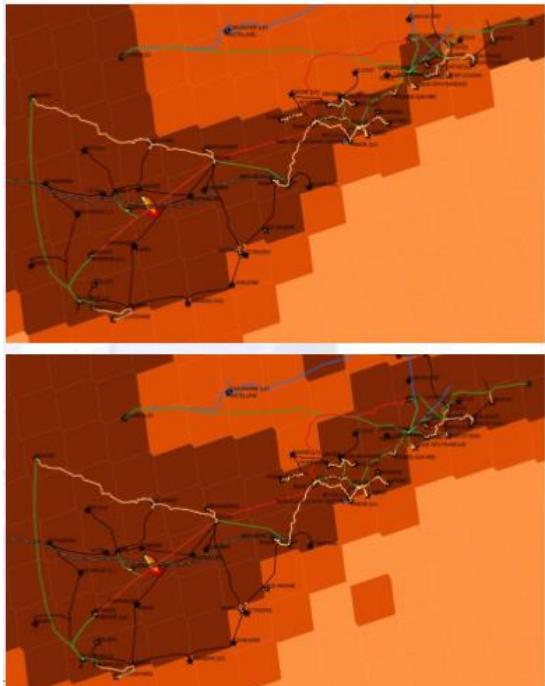


Impacts of wildfires on infrastructures

South France ; climate change -> selection of extreme scenarios

Wildfire simulation Smoke emissions (FEPS) -> EMITIMES -> HySPLIT concentration

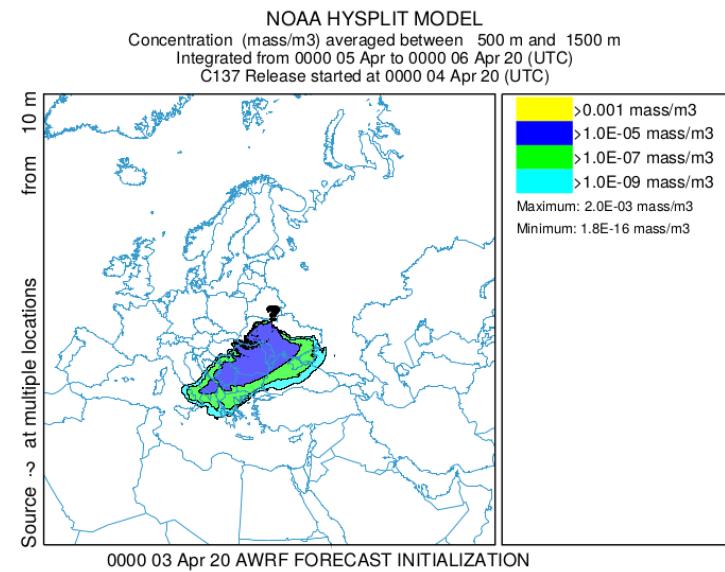
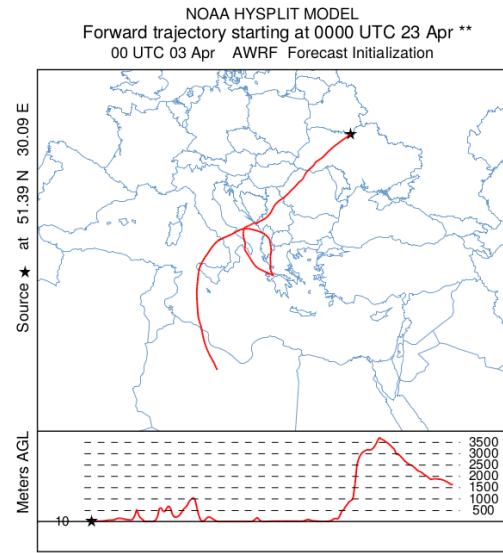
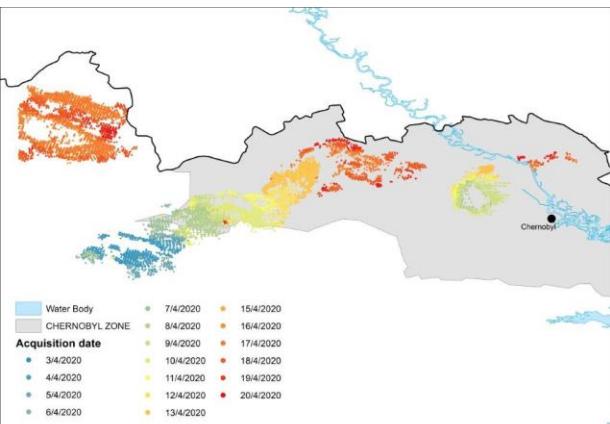
Export on GIS merging of different platforms





Radionuclide dispersion from April 2020 Chernobyl wildfires

- Daily burned area from MODIS, daily emission rates from local partners, EMITIMES, multi-day concentration simulation for Cs-137





Thank you
for your attention